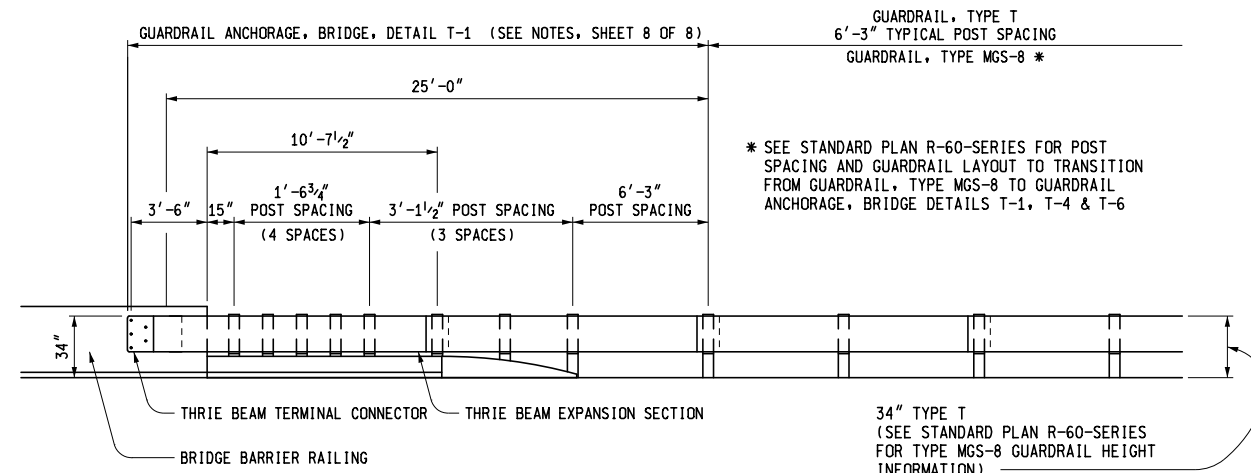
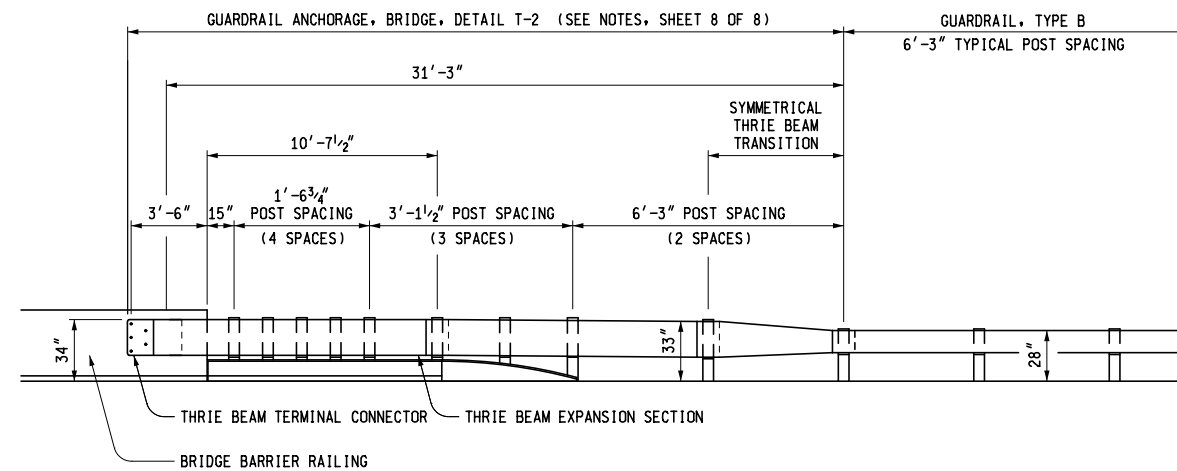


PLAN VIEW



ELEVATION VIEW
(TO BE USED WITH GUARDRAIL, TYPE T & TYPE MGS-8)

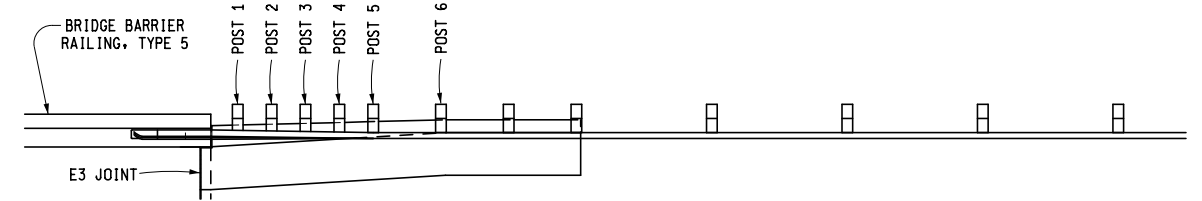


ELEVATION VIEW
(TO BE USED WITH GUARDRAIL, TYPE B)

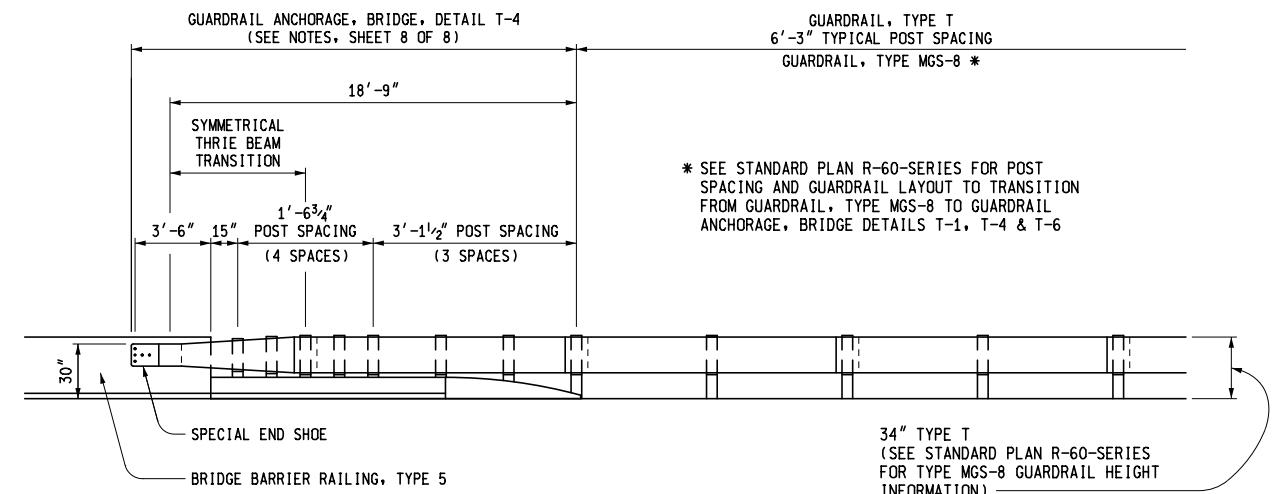
**DETAILS FOR CONNECTING GUARDRAIL TO
BRIDGE BARRIER RAILINGS, TYPE 4, 2-TUBE, 4-TUBE,
AESTHETIC PARAPET TUBE, OR 3 TUBE WITH PICKETS**
(WITHOUT EXPANSION AT BACKWALL)

GUARDRAIL ANCHORAGE,
BRIDGE, DETAILS

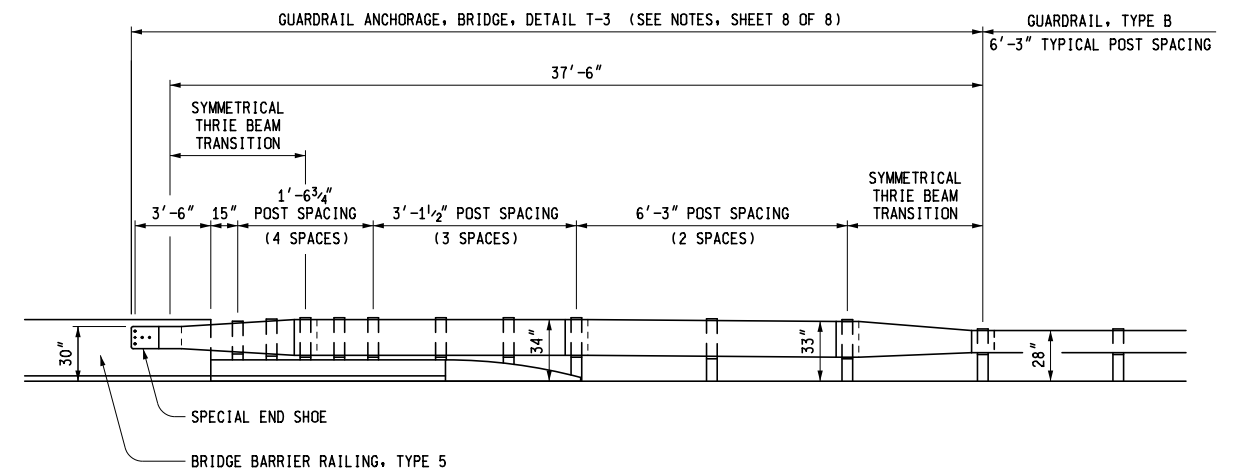
R-67-G-LAP SHEET
1 OF 8



PLAN VIEW



ELEVATION VIEW
(TO BE USED WITH GUARDRAIL, TYPE T & TYPE MGS-8)

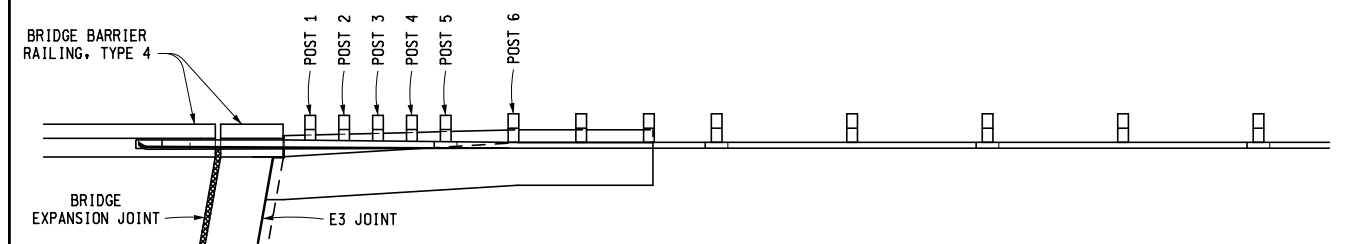


ELEVATION VIEW
(TO BE USED WITH GUARDRAIL, TYPE B)

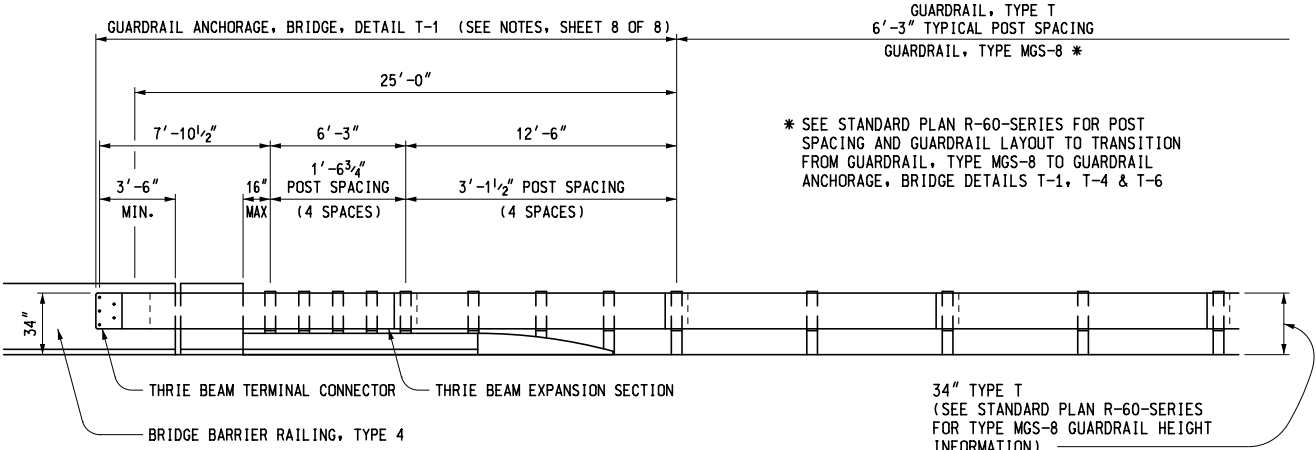
DETAILS FOR CONNECTING GUARDRAIL TO BRIDGE BARRIER RAILINGS, TYPE 5
(WITHOUT EXPANSION AT BACKWALL)

GUARDRAIL ANCHORAGE,
BRIDGE, DETAILS

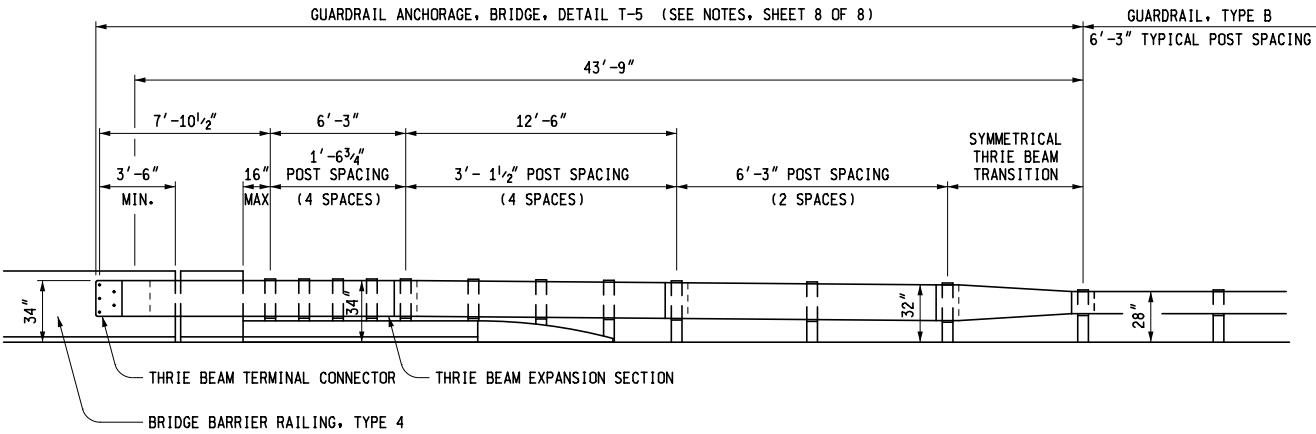
R-67-G-LAP SHEET
2 OF 8



PLAN VIEW



ELEVATION VIEW
(TO BE USED WITH GUARDRAIL, TYPE T & TYPE MGS-8)



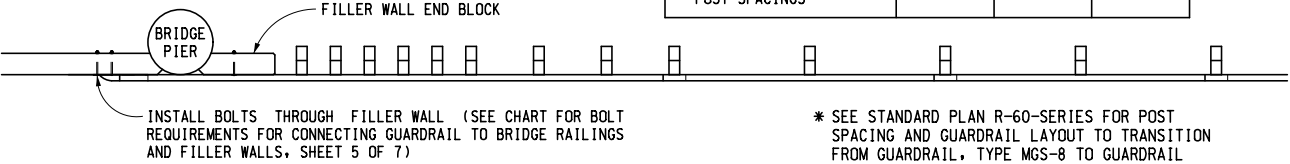
ELEVATION VIEW
(TO BE USED WITH GUARDRAIL, TYPE B)

**DETAILS FOR CONNECTING GUARDRAIL TO
BRIDGE BARRIER RAILINGS, TYPE 4, 2-TUBE, 4-TUBE,
AESTHETIC PARAPET TUBE, OR 3 TUBE WITH PICKETS**
(WITH EXPANSION AT BACKWALL)

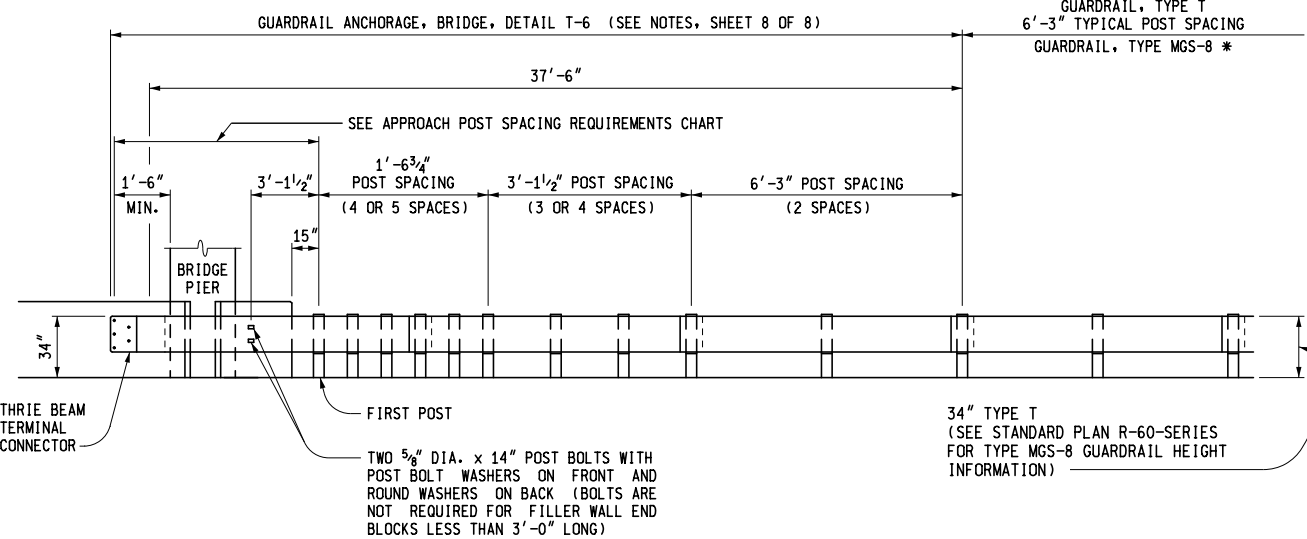
GUARDRAIL ANCHORAGE,
BRIDGE, DETAILS

NOTE: FILLER WALL END BLOCK MAY BE OMITTED WHEN FIRST ANCHORAGE POST CAN BE INSTALLED FULL DEPTH 1'-3" FROM BRIDGE PIER.

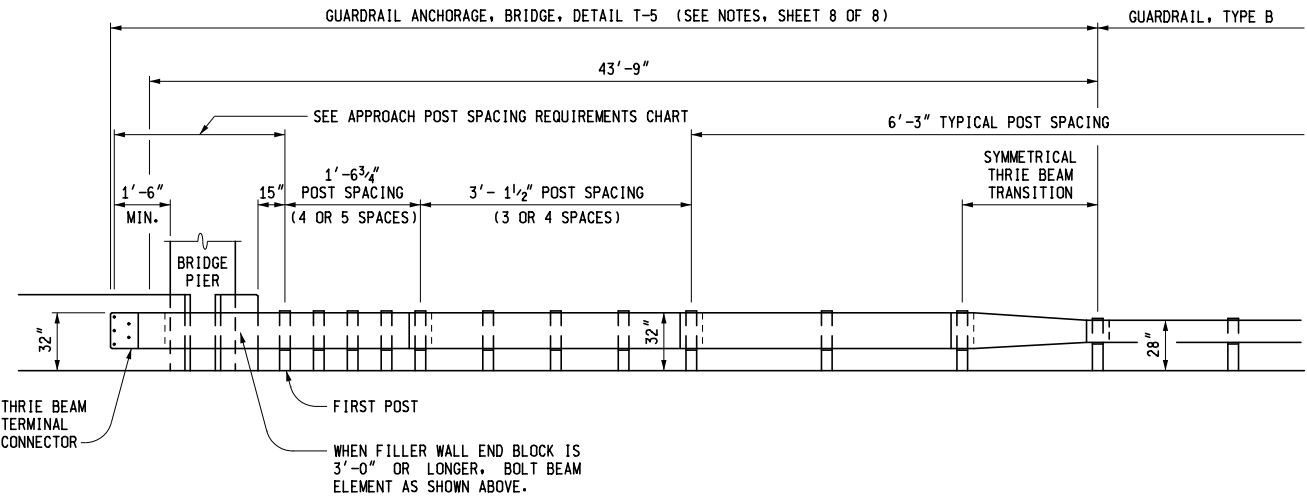
APPROACH POST SPACING REQUIREMENTS			
DISTANCE FROM ANCHOR BOLTS TO FIRST POST	7'-11 3/4"	9'-6 1/2"	11'-1 1/4"
NUMBER OF 1'-6 3/4" POST SPACINGS	4	5	4
NUMBER OF 3'-1 1/2" POST SPACINGS	4	3	3



PLAN VIEW



ELEVATION VIEW
(TO BE USED WITH GUARDRAIL, TYPE T & TYPE MGS-8)



ELEVATION VIEW
(TO BE USED WITH GUARDRAIL, TYPE B)

DETAILS FOR CONNECTING GUARDRAIL TO FILLER WALLS

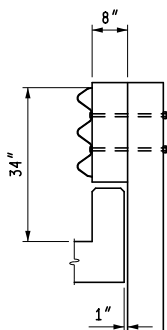
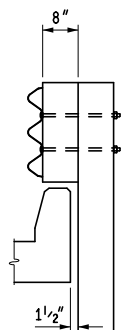
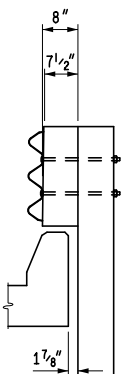
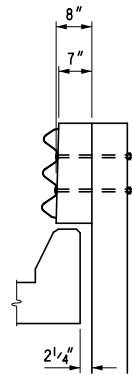
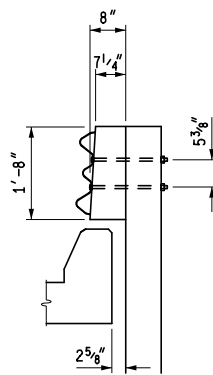
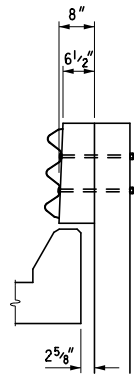
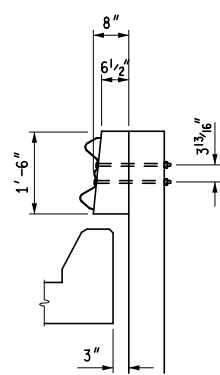
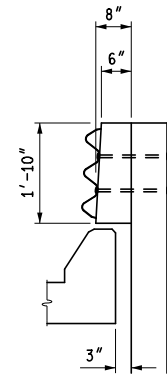
GUARDRAIL ANCHORAGE,
BRIDGE, DETAILS

34"

TOP OF SLAB
(ROADWAY)

Diagram illustrating the required height of a parapet wall above the roadway slab. The height is measured from the top of the slab (roadway) to the top of the parapet wall. The diagram shows a 34" height requirement. The wall is shown with a 7" base for 2 tubes and a 9" base for 4 tubes. The height is measured from the top of the slab (roadway) to the top of the parapet wall. The diagram also shows a variable height section for a 3-tube wall with pickets, which does not apply to aesthetic parapet walls.

Diagram illustrating the vertical clearance of a bridge deck over a roadway. The clearance is indicated as 3'4" from the top of the slab (roadway) to the bottom of the bridge deck. The diagram also shows the top of the curb or sidewalk and the top of the slab (roadway).

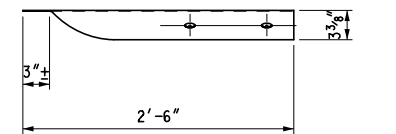
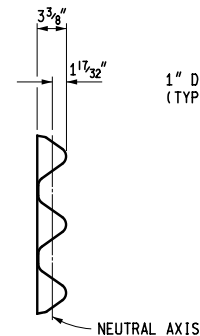
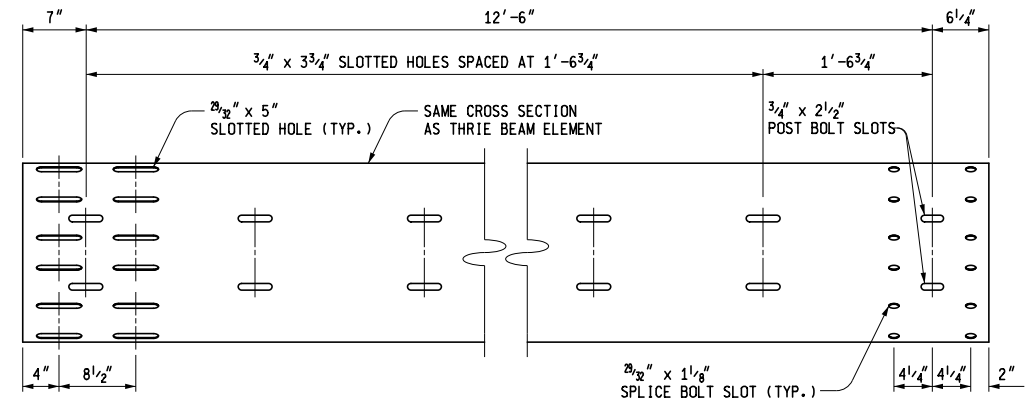
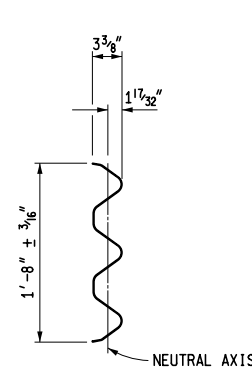


BOLT REQUIREMENTS FOR CONNECTING GUARDRAIL TO BRIDGE RAILINGS & FILLER WALLS			
BRIDGE RAILING	BOLT LENGTH	MINIMUM THREAD LENGTH	NUMBER REQUIRED
TYPE 4	12 $\frac{1}{2}$ "	4"	5
TYPE 5	11 $\frac{1}{2}$ "	4"	4
2 TUBE	WALL THICKNESS + 2"	2"	5
4 TUBE	WALL THICKNESS + 2"	2"	5
3 TUBE WITH PICKETS	WALL THICKNESS + 2"	2"	5
AESTHETIC PARAPET	WALL THICKNESS + 2"	2"	5
** FILLER WALL	WALL THICKNESS + 2"	2"	5

SHORTER BOLT LENGTHS MAY BE USED PROVIDED THE BOLT EXTENDS
 $\frac{1}{4}$ " BEYOND THE NUT WHEN TIGHTENED.

SHORTER BOLT LENGTHS MAY BE USED PROVIDED THE BOLT EXTENDS $\frac{1}{4}$ " BEYOND THE NUT WHEN TIGHTENED.

**** THE USE OF 7/8" DIA. ADHESIVE ANCHORED BOLTS EMBEDDED 8" TO ATTACH GUARDRAIL TO FILLER WALLS WILL BE ALLOWED, INSTEAD OF BOLTING THROUGH THE FILLER WALL, IN THE FOLLOWING LOCATIONS:**

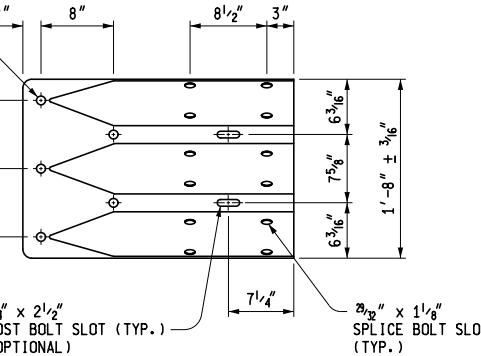


5/32"

2 1/4" DIA.

15/16" DIA. HOLE

ROUND WASHER FOR
7/8" DIA. BOLTS



3"

3"

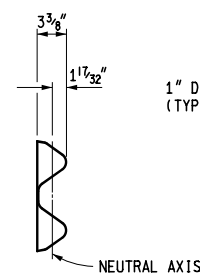
1 1/2"

1 1/2"

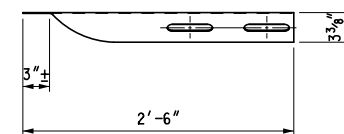
1 5/16" DIA. HOLE

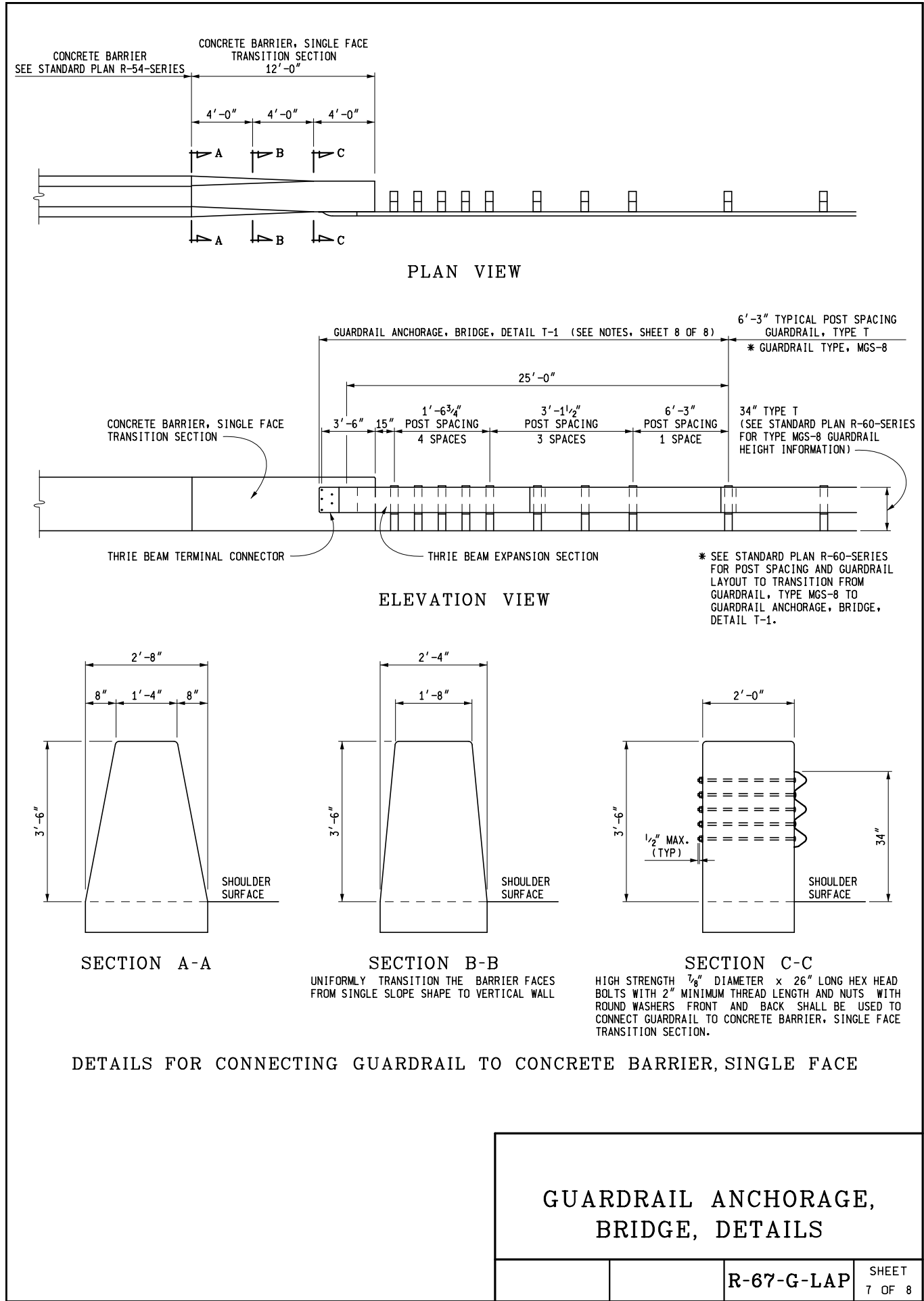
1/4"

SQUARE WASHER FOR
7/8" DIA. BOLTS



DRILL (DO NOT BURN) ADDITIONAL
1" DIA. HOLES WHEN NEEDED TO
AVOID STEEL REINFORCEMENT IN
BRIDGE RAILING _____





NOTES:

ALL POSTS, OFFSET BLOCKS, BEAM ELEMENTS, REFLECTORS, AND HARDWARE, (INCLUDING BOLTS, NUTS, AND WASHERS) SHALL CONFORM TO THE CURRENT STANDARD SPECIFICATIONS AND TO THE CURRENT STANDARD PLAN R-60-SERIES, WHERE APPLICABLE, EXCEPT AS SPECIFIED ON THIS STANDARD.

ALL POSTS USED TO CONSTRUCT GUARDRAIL ANCHORAGE, BRIDGE SHALL BE 7'-0" LONG.

THE THRIE BEAM TERMINAL CONNECTOR AND SPECIAL END SHOE SHALL BE THE SAME MATERIAL AS ADJACENT RUN OF GUARDRAIL, EXCEPT THAT THEY SHALL NOT BE LIGHTER THAN 10 GAGE (0.138").

SECTIONS OF THE THRIE BEAM ELEMENT REQUIRED TO BE TWISTED FOR USE IN ANCHORAGE SHALL BE FIELD BENT.

GUARDRAIL BEAM ELEMENTS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC, EXCEPT FOR THE THRIE BEAM TERMINAL CONNECTOR WHICH MAY BE LAPPED IN EITHER DIRECTION.

STANDARD SPLICE BOLTS SHALL BE USED WHEN SPLICING THE THRIE BEAM TERMINAL CONNECTOR TO THE THRIE BEAM EXPANSION SECTION AND WHEN SPLICING THE SPECIAL END SHOE TO THE TRANSITION SECTION. THE SPLICE BOLT NUT SHALL BE INSTALLED FINGER-TIGHT AND SHALL FULLY ENGAGE THE SPLICE BOLT WITH A MINIMUM OF ONE THREAD EXTENDING BEYOND THE NUT. THIS SHALL BE FOLLOWED UP BY UPSETTING THE FIRST THREAD ON THE OUTSIDE OF THE NUT WITH A CENTER PUNCH OR COLD CHISEL, SO THAT IT WILL NOT LOOSEN.

SEE THE CURRENT STANDARD PLAN R-32-SERIES FOR APPROACH CURB AND GUTTER AND DOWNSPOUT HEADER.

GUARDRAIL ANCHORAGE, BRIDGE, DETAILS T-1, T-2, T-5, AND T-6 REQUIRE THAT THE THRIE BEAM TERMINAL CONNECTOR BE ATTACHED TO THE 2³/₈" x 5" LONG SLOTTED HOLES IN THE THRIE BEAM EXPANSION SECTION.

SEE APPROPRIATE PLANS TO DETERMINE WHETHER GUARDRAIL ANCHORAGE, BRIDGE SPANS A BRIDGE EXPANSION JOINT.

SEE THE CURRENT STANDARD PLAN R-55-SERIES FOR FILLER WALLS AND FILLER WALL END BLOCK.

SEE STANDARD PLAN R-54-SERIES FOR "CONCRETE BARRIER, SINGLE FACE, TYPE --".

CONCRETE BARRIER, SINGLE FACE TRANSITION SECTION SHALL BE INCLUDED IN THE PAY ITEM "CONCRETE BARRIER, SINGLE FACE, TYPE --".

GUARDRAIL ANCHORAGE,
BRIDGE, DETAILS

R-67-G-LAP

SHEET
8 OF 8